

ABSTRACT OF THE DISCLOSURE

A method for manufacturing p-type nitride semiconductor comprising a semiconductor layer forming process where a low resistivity p-type nitride semiconductor layer is formed on a substrate by introducing the sources of p-type dopant, nitrogen and Group III sources on a substrate held at a temperature of 600°C or higher and a cooling process for cooling the substrate which is bearing the p-type nitride semiconductor layer. The manufacturing method features in that the hole carrier concentration of the p-type nitride semiconductor layer decreases during the cooling process. A superior quality p-type nitride semiconductor is made available, without needing any annealing treatment after growth, by properly specifying the concentration of atmosphere gas and the cooling time.